RESEARCH HIGHLIGHT

January 2008

Socio-economic Series 08-002

The Dynamics of Housing Affordability

INTRODUCTION

Shelter is the largest expenditure most Canadian households make and affordable housing can have a big impact on their well-being. For these reasons, housing affordability is closely watched by a wide range of stakeholders — from housing advocates to policy analysts — interested in the housing and broader welfare of Canadians.

Measuring housing affordability involves comparing housing costs to a household's ability to meet those costs. The indicator underlying this measurement, the share of before-tax household income spent on shelter costs, is known as the Shelter Cost-to-Income Ratio (STIR).[1] A benchmark of less than 30 per cent for the STIR is commonly accepted as the upper limit for defining affordable housing. Much work has been, and is being done, to examine those who spend 30 per cent or more of their household income to determine if they do so out of choice, through having the means and preference to spend more than the norm for housing, or out of necessity, because of their low incomes.[2]

The discussion and results outlined in this *Highlight* summarize the outcome of a joint research project conducted by Statistics Canada and Canada Mortgage and Housing Corporation (CMHC) that focused exclusively on the dynamics of housing affordability. The research examines those Canadians who lived in households spending more than the affordability benchmark over 2002—2004 and reviews how often this occurred and whether it was occasional or persistent. It also compares the characteristics of those spending 30 per cent or more of their household income on shelter to those spending less.

The data source: Survey of Labour and Income Dynamics (SLID)

In the past all household income and shelter cost data used to calculate STIRs were cross-sectional in nature, limiting them to describing housing affordability at a particular point in time, usually a single year. No data source followed households over time, collecting both their incomes and shelter costs, to enable the tracking and longitudinal analysis of how their housing affordability evolved. Since 2002, CMHC has sponsored a module of questions on shelter costs on the *Survey of Labour and Income Dynamics* (SLID) (see SLID text box) that has enabled the analysis of housing affordability on a longitudinal basis.

The research reviews the housing affordability trajectories of 25 million people[3] (longitudinal universe) who were represented by those tracked by SLID from 2002 through 2004 and who lived in non-farm

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1 Owner shelter costs include mortgage payments, property taxes, condominium fees, and utility payments (for heating fuel, water and electricity). Renter shelter costs consist of rent payments plus utilities. Total annual household shelter costs are derived from this information for comparison to total annual before-tax household income. Before-tax income includes transfers from government but does not subtract taxes. Income data is collected for each person 15 years of age and over and then aggregated into household income.

2 The core housing need indicator developed by Canada Mortgage and Housing Corporation (CMHC) identifies only those Canadian households in housing need. Core housing need refers to those whose housing is overcrowded, in need of major repairs or costs 30 per cent or more of household income and who could not afford to rent adequate, suitable and affordable housing in their local housing market. CMHC will present the results of a longitudinal review of core housing need based on Statistics Canada's *Survey of Labour and Income Dynamics* (SLID) data in an upcoming publication.

3 To conduct longitudinal analysis, it is necessary to work at the person level and not at the household level since the household universe is dynamic. Households form, change, and dissolve due to birth, marriage, divorce, death and the comings and goings of household members. This creates problems when attempting to follow households over time. Therefore, household characteristics (including shelter costs, incomes, and STIRs) are attached to each SLID household member.

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households having positive incomes and consisting of only one economic family unit.[4] Those Canadians with a higher probability of exceeding the affordability benchmark over time are identified through the building of two logistic regression models, which used a reduced universe of almost 20 million people of age 16 and over for whom SLID had a complete set of socio-economic characteristics. The first regression model was run to estimate the probabilities of a Canadian living in a household "ever" (at least one year) having a STIR of 30 per cent or more. The second regression model calculates the probabilities of a Canadian "persistently" (all three years of the study period) spending more than the affordability benchmark.[5]

DESCRIPTIVE ESTIMATES

Group of people exceeding housing affordability benchmark is very dynamic over time

Cross-sectional descriptive estimates show that about one-fifth of Canadians were living in households spending 30 per cent or more of their income on shelter in any single year between 2002 and 2004 (*see* table 1). Looking at this same period longitudinally, SLID data shows that 8.6 per cent lived in households that exceeded the affordability benchmark persistently for all three years, while 19.4 per cent lived in households that exceeded the benchmark occasionally for one or two years (*see* table 2). As a whole, 28 per cent of Canadians ever (at least one year in the period) experienced this situation while 72 per cent never did. The longitudinal descriptive estimates indeed show the very dynamic nature of the group of people exceeding the affordability benchmark. Of those ever exceeding the affordability benchmark, almost one-third did so persistently while the other two-thirds were at some time or other above or below the affordability benchmark during 2002—2004. In addition, the fact that many more Canadians ever exceeded the benchmark over the three-year period of study (28 per cent), compared to the cross-sectional estimates for any single year (about 20 per cent), confirms that over time there is an important turnover with different people encountering housing affordability constraints from year to year.

Survey of Labour and Income Dynamics (SLID)

SLID is an annual household survey conducted by Statistics Canada that uses computer-aided telephone interviews to collect information on income, labour, education and, since 2002, housing. Between January and March, interviewers collect information relating to the previous calendar year regarding respondents' labour experiences and income, educational activity, and family relationships. Demographic characteristics of family and household members, and information about their dwellings and shelter costs represent a snapshot as of the end of each calendar year.

The response rate averaged 77.3 per cent during the three-year study period covered in this research. SLID covers all individuals in Canada, excluding residents of the three territories, residents of institutions and persons living on Indian reserves or in military barracks, and those who are homeless. Overall, these exclusions amount to less than three per cent of the population.

SLID is a longitudinal survey that follows a panel or group of people over a period of six consecutive years. The SLID sample is composed of two panels. Each panel consists of roughly 17,000 households and 30,000 people. A new panel is introduced every three years, so two panels always overlap.

In 2002, a housing cost module was added to SLID as a result of CMHC sponsorship. Until then, SLID had collected only a few housing characteristics. As part of the housing cost module, over 20 housing-related questions were added to SLID. The addition of this module is enabling the review of Canadians' housing conditions between censuses as well as the tracking of their housing trajectories over time.

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4 An economic family unit refers to either an economic family or an unattached individual. An economic family is a group of two or more persons who live in the same dwelling and are related to each other by blood, marriage, common law or adoption. An unattached individual is a person living either alone or with others to whom he or she is unrelated, such as roommates or a lodger. This research uses those households consisting of either only one economic family or one unattached individual living alone.

5 Unlike other CMHC studies on housing affordability, the universe used in this study includes those people living in households with STIRs equal to or higher than 100 per cent and excludes households with shelter costs equal to zero. From time to time households rely heavily on funds not counted as income (examples would be savings, bursaries, loans, gifts from outside the household or charitable support) which may result in households having shelter costs greater than their incomes. The actual circumstances of these households are unknown. Also, households may have zero shelter costs when the use of a dwelling comes as part of employment compensation.

6 Logistic regressions isolated the effects of specific characteristics of people on their probabilities or chances to live in a household spending 30 per cent or more of income on shelter costs. For example, the logistic regression models identified the overall chances of people living in a lone-parent household of (i) ever or (ii) persistently exceeding the affordability benchmark while holding other variables constant (for example, age, household tenure status), and at the same time their differences from a reference group within the family type category (that is, couple families). Household income was not included as an explanatory variable in the models because it was part of the calculation of the characteristic of interest, that is, the STIR.

Table 1 Cross-sectional descriptive estimates for people* living in households exceeding affordability benchmark, Canada (2002 - 2004)

STIR	2002		2003		2004	
	People (thousands)	Per cent	People (thousands)	Per cent	People (thousands)	Per cent
less than 30 per cent	22.872	80.6	23.036	80.4	23.131	80.0
30 per cent or more	5.507	19.4	5.611	19.6	5.780	20.0
Total	28.379	100.0	28.647	100.0	28.912	100.0

Source: SLID
* Estimates include people of all ages

Table 2 Longitudinal descriptive estimates for people* living in households exceeding affordability benchmark, Canada, 2002-2004

Period exceeding affordability benchmark	Never	Ever		Total
		Occasionally	Persistently	
Number of years spending 30% or more on shelter costs	0	1	2	3
People (thousands)	17.987	3.114	1.756	2.154	25.011
Per cent	71.9	12.4	7.0	8.6	100.0

Source: SLID
* Estimates include people of all ages

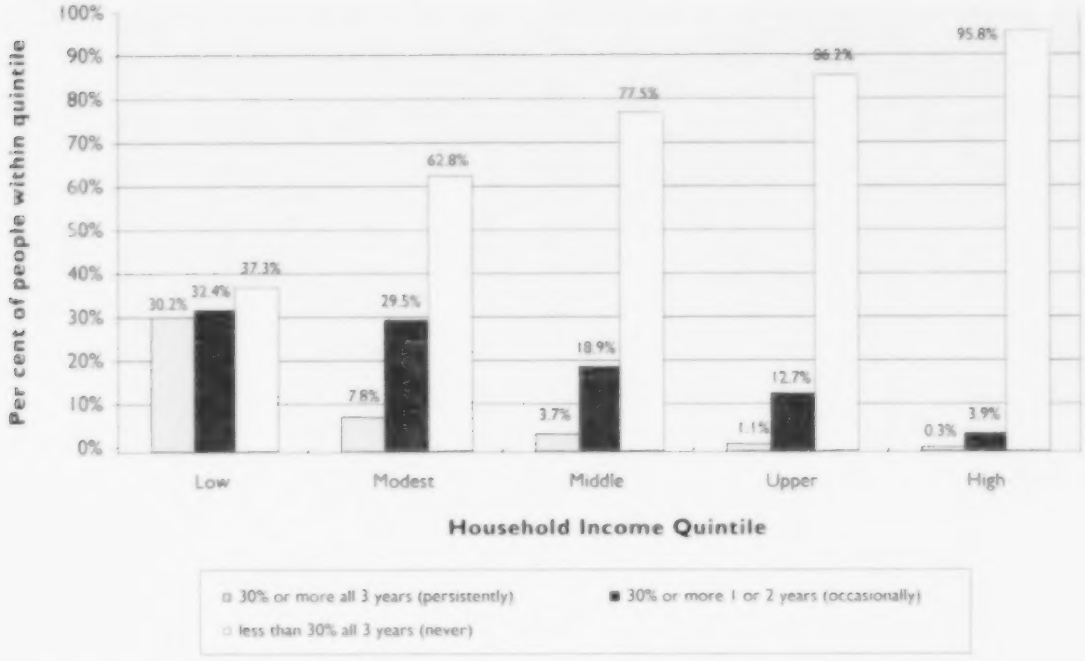
Low-income people more prone to exceed the benchmark both occasionally and persistently, middle- and higher-income people do so only occasionally.

Household income is a key determinant of STIRs. On average, relatively lower-income households have higher shelter cost burdens and are more likely than others to spend more than the housing affordability benchmark. In any single year (from 2002 to 2004), SLID descriptive estimates show that 80 per cent of people in households exceeding the affordability benchmark lived in households with low or modest incomes, that is, in the two bottom household income quintiles.

Longitudinal descriptive estimates show that as household income increased a lower percentage of people live at least one year in a household exceeding the affordability benchmark. For instance, while almost 63 per cent of people who lived in households in the lowest income quintile ever exceeded the affordability benchmark, only 23 per cent of people who lived in households with middle incomes ever did so.

The persistency of people living in households exceeding the affordability benchmark also varied across households with different incomes. Among those who lived in households with low incomes and ever exceeded the affordability benchmark (62.6 per cent), one half exceeded it occasionally (32.4 per cent) while the other half did so persistently (30.2 per cent). The remainder of people in low income (37.4 per cent) never exceeded the affordability benchmark (*see* figure 1).

As their household income increased, a larger percentage of people live in households exceeding the affordability benchmark occasionally rather than persistently. Indeed, of those who lived in households with middle or higher incomes ever facing affordability problems more than 80 per cent of them exceeded the benchmark occasionally as opposed to persistently (*see* figure 1).



Source: SLID

** Estimates include people of all ages*

Figure 1 Per cent of people* living in households spending above or below the affordability benchmark by duration and household income quintile, Canada, 2002—2004

Longitudinal descriptive estimates also show there was an important turnover of those experiencing affordability problems at higher income levels. In fact, among those who lived in households with middle or higher incomes, the proportion of people ever facing affordability problems was more than double the proportion of people living in households exceeding the affordability benchmark in any single year (*see* table 3 for the 2002 to 2002—2004 comparison).

RESULTS FROM LOGISTIC REGRESSION MODELS

Subsidized renters have significantly lower probability than market renters of persistently spending 30 per cent or more for shelter

The logistic models indicated that renters in general had the highest probability of ever spending above the affordability benchmark and, with the exception of subsidized renters (discussed below), persistently spending above this benchmark. Specifically, the probability of market renters ever spending 30 per cent or more of household income on shelter was one in three, while their probability of persistently spending in this fashion all three years was about one in eight (*see* figure 2).

Subsidized renters in general had the highest median STIRs (*see* table 4). Their STIRs would have been much higher without rent subsidies. The median shelter costs of renters subsidized for all three years in the study were 40 per cent below those of market renters. This helped to make their shelter costs much more affordable when compared to their very low median incomes.

Table 3 Comparison of percentages of people* exceeding the affordability benchmark, cross-sectional (2002) and longitudinal (2002-2004)

Income Quintile	Cross-sectional 2002 (per cent exceeding affordability benchmark)	Longitudinal 2002-2004 (per cent ever exceeding affordability benchmark)	Difference (percentage points)	Difference expressed as per cent of cross-sectional estimate
Low	56.6	62.6	6.0	10.6
Modest	23.3	37.3	14.0	60.1
Middle	10.9	22.6	11.7	107.3
Upper	4.8	13.8	9.0	187.5
High	1.4	4.2	2.8	200.0

Source: SLID
* Estimates include people of all ages

Table 4 Median Household STIR, annual shelter cost and income by tenure category, Canada, 2002 — 2004*

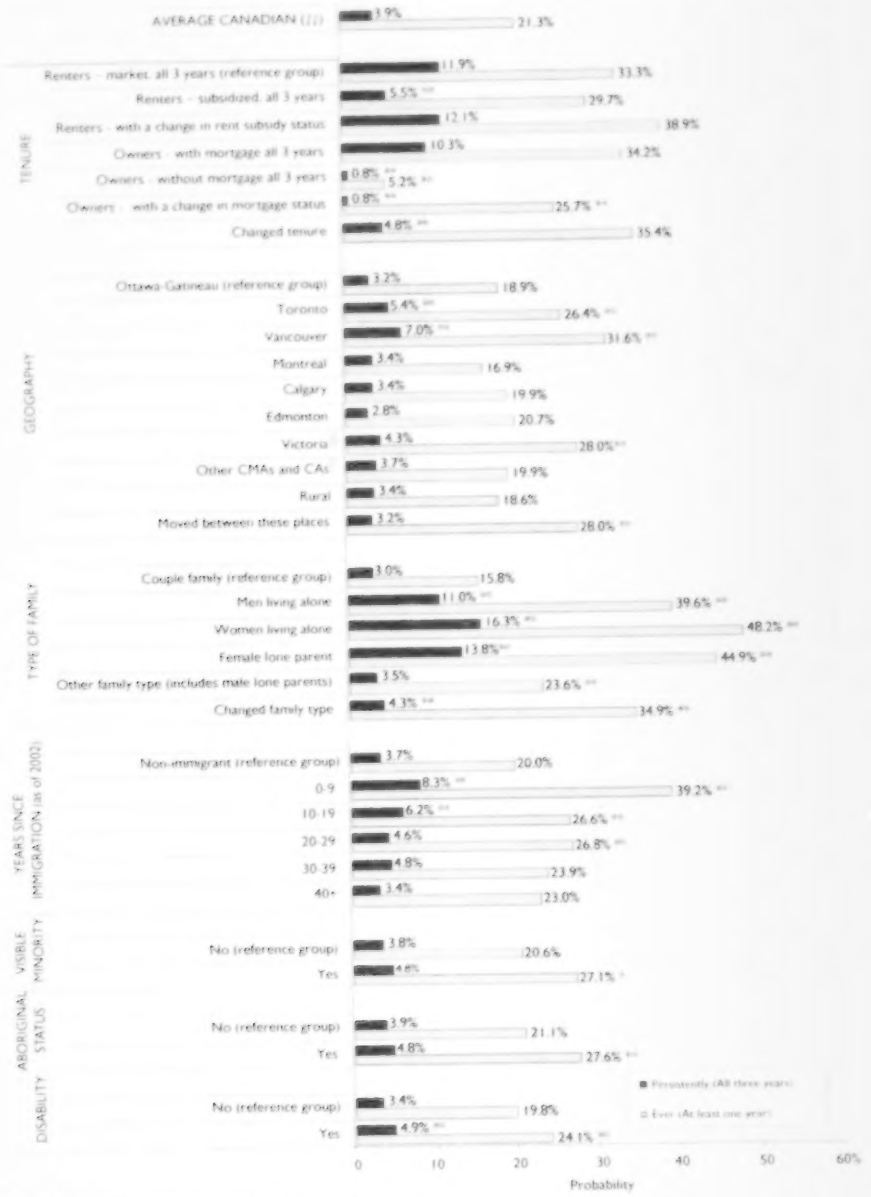
Tenure	Median STIR	Median Shelter Cost	Median Household Income
Renters — with a change in rent subsidy status	27.0%	$7,146	$27,445
Renters — subsidized all 3 years	26.4%	$5,004	$19,547
Renters — market all 3 years	22.5%	$8,301	$39,572
Changed tenure	20.1%	$9,975	$54,984
Owners — with mortgage all 3 years	19.6%	$15,282	$79,306
Owners — with a change in mortgage status	13.1%	$9,456	$76,080
Owners — without mortgage all 3 years	7.8%	$4,817	$62,413

Source: SLID
* Information in this table is based on the reduced universe of people of age 16 and over who were present for all three years of the study period.

As stated previously, the probability of persistently spending 30 per cent or more of income on shelter was about one in eight for market renters. This dropped to one in 18 for renters subsidized all three years in spite of the fact that their median income was only half that of market renters. This provides additional evidence of the value of rent subsidies to those who receive them. If subsidized renters had paid the median market rent of $8,301 rather than their subsidized rent, their average STIR would have been 42 per cent instead of 26 per cent.

Owners without mortgages had the lowest STIRs. Since the probability of owners without mortgages ever spending 30 per cent or more of household income on shelter was only 5.2 per cent, they were a class of their own, far below the 26 per cent of the next lowest tenure group of Canadians, those owners who changed their mortgage status over the period of study.

Figure 2 Probability [1] of people exceeding the housing affordability benchmark (STIR ≥ 30%) over 2002-2004, Canada. Selected socio-economic variables



** *Significantly different from reference group 95 per cent of the time*

[1] *Probabilities based on logistic models using only population of age 16 and over who were present for all three years of the study period*

[11] *Probabilities for an average or typical Canadian*

While Canadians who were owners with mortgages had about the same probability of ever exceeding the affordability benchmark as market renters, they did so under totally different circumstances. Owners with mortgages had the highest median incomes at $79,306, and also the highest median shelter costs, at $15,282 (*see* table 4). Having the highest incomes, owners with mortgages are better able to afford to pay a higher percentage of income on shelter. Further, their high shelter payments include mortgage principal that builds equity. In contrast, market renters had median incomes which were only half those of owners with mortgages, but median shelter costs that were more than half.

While the nearly 10 per cent of people who lived in households that changed tenure during the three-year study period had a relatively high probability (35.4 per cent) of ever spending 30 per cent or more of income on shelter, they had a much lower probability (4.8 per cent) of doing so on a persistent basis. The reasons for this are likely complex. It may be that their tenure change is associated with a short-term increase in STIRs but that, in the longer term (in this study, over a period of three years), their situation has improved. The change in tenure may be associated with such varied circumstances as a move that temporarily increases shelter costs faster than income or a move to adjust to family breakup and a drop in income.

Toronto and Vancouver residents stand out

Housing costs are highest in Toronto and Vancouver. Are these higher costs reflected in higher probabilities of exceeding the housing affordability benchmark in these cities? The logistic models indicate that Canadians living in Vancouver and Toronto had significantly higher probabilities of ever and persistently exceeding the affordability benchmark than people living in Ottawa-Gatineau, the city chosen as a reference for comparison (*see* figure 2).

Residents of Victoria also had a high probability (28 per cent) of ever spending 30 per cent or more of household income on shelter. However, in terms of persistently exceeding the affordability benchmark, they were not significantly different from Ottawa-Gatineau. Canadians living in Montréal, Calgary, Edmonton, "Other CMAs and CAs" and "Rural" areas had about the same probability of spending above the housing affordability benchmark as Ottawa-Gatineau residents.

As noted earlier, people living in households whose circumstances change tend to have higher STIRs. Results show that Canadians who moved between large metropolitan areas and/or smaller urban centres or rural places also had a significantly higher probability (28 per cent) of ever exceeding the affordability benchmark than those who lived in Ottawa-Gatineau throughout the study period (18.9 per cent). But in terms of always exceeding the benchmark, results show that movers were not significantly different. Possibly, it just takes time to find a good job and affordable shelter in a new city.

Those living alone or in female lone-parent families are the most likely to spend above the housing affordability benchmark

Those living alone or in lone-parent families are significantly more likely to ever spend 30 per cent or more of household income on shelter — especially women living alone and female lone-parent families who had probabilities of about 48 per cent and 45 per cent, respectively. People living in these two types of family arrangements also had the highest probabilities (about 16 per cent and 14 per cent, respectively) of persistently spending above the benchmark. These smaller families have more constrained incomes as they usually have a single earner and only one source of income (whether from government transfers or a salary). Even when compared on a per capita basis to families having multiple earners, lone-parent and one-person families show much lower levels of income.

In contrast, for couples, the probability of living in a household ever spending more than the affordability benchmark was 16 per cent and the probability of doing so persistently just three per cent, both below the respective probabilities for an average Canadian of about 21 and 4 per cent. Couple families benefit from having the highest median income to offset the highest median shelter cost.

Those whose family type changed deserve special mention. Like those who moved or changed tenure, the probability of ever exceeding the benchmark for those whose family arrangement changed was much higher (34.9 per cent) than it was for couples (15.8 per cent); in fact, it was almost on a par with those living alone and female lone-parents. Their probability of always exceeding the benchmark was also significantly higher (4.3 per cent) than for couples (3 per cent) — although not by nearly as much as unattached individuals or lone parents. Perhaps people in families who add or lose members are able to make adjustments that reduce their STIRs after a year or two, whereas those who live alone or are bringing up children by themselves do not have such flexibility.

Recent immigrants have high probabilities of ever spending more than the housing affordability benchmark

Given the tendency of most immigrants to live in Toronto and Vancouver, the most expensive Canadian cities, and to have larger family sizes, it is not surprising that immigrants had significantly higher probabilities of ever living in households spending 30 per cent or more of income on shelter at least once during the three-year study period. Their higher probability declines with the length of time they

have lived in Canada. Those in Canada for less than 10 years had the highest probability of ever exceeding the affordability benchmark at 39.2 per cent. This probability dropped to 23 per cent for those in Canada for 40 or more years, a level not significantly different from the Canadian-born (*see* figure 2).

Results were similar for immigrants persistently exceeding the affordability benchmark. Recent immigrants (8.3 per cent) were significantly more likely than the Canadian-born (3.7 per cent) to persistently exceed the benchmark and this probability dropped off with the number of years in Canada until, at 20 years or more in Canada, there was no significant difference from the Canadian-born.

When compared with all immigrants (averaging 27 per cent), people who were part of a visible minority group had a very similar probability (27.1 per cent) of living in a household ever spending more than the affordability benchmark. Indeed, more than 70 per cent of immigrants who arrived in Canada since 1982 belong to a visible minority group.

Aboriginal households living off-reserve are more likely to spend above the affordability benchmark, but not persistently

While Aboriginals living off reserve (27.6 per cent) were significantly more likely to ever exceed the affordability benchmark than non-Aboriginals (21.1 per cent), they were not significantly more likely than non-Aboriginals to stay in that situation for all three years. Aboriginals have a higher rate of moving than non-Aboriginals. The percentage of Aboriginals that moved during the three-year study period was 17.4 per cent, compared to 12.4 per cent for non-Aboriginals, and as already seen, households that moved were more likely to exceed the affordability benchmark.

Disabled more likely to exceed affordability benchmark

Those who self-identified as disabled at least once during the three-year study period had significantly higher probabilities (24.1 per cent) than the non-disabled (19.8 per cent) of living in a household ever or persistently exceeding the affordability benchmark. The disabled were also more likely to live in families where the major source of income comes from government transfers and not wages and salaries.

SUMMARY AND CONCLUSIONS

This research project conducted jointly by Statistics Canada and Canada Mortgage and Housing Corporation has extended the traditional cross-sectional analysis of housing affordability using shelter cost-to-income ratios (STIRs) by adding an examination of longitudinal data. Before this research, studies on housing affordability in Canada were cross-sectional in nature, that is, referring to a specific point in time, often to a single year.

While cross-sectional data indicate that a stable one-fifth of Canadians lived in households spending above the affordability benchmark for shelter in any single year, longitudinal estimates show other important findings. When measured over a three-year period (2002—2004), 28 per cent of Canadians reported ever living in a household exceeding the affordability benchmark. This proportion is considerably larger than that indicated by traditional cross-sectional data. About eight percentage points more Canadians experienced these conditions at some point during the three-year period than did so in any single year (some 20 per cent).

The 28 per cent of Canadians who exceeded the affordability benchmark at least once during the three-year study period was composed of 8.6 per cent exceeding it all three years and 19.4 per cent exceeding it for one or two years. These longitudinal estimates show that a significant proportion of Canadians experienced changes in their housing affordability condition from year to year. Indeed, among those Canadians ever reporting living in households exceeding the affordability benchmark, 69 per cent did so occasionally while only 31 per cent did so persistently.

Those who were living alone, female lone parents, renters, immigrants, and those living in Vancouver or Toronto, had a higher probability of living in households persistently paying 30 per cent plus of household income for shelter year during the three-year study period. In addition to these factors associated with persistently spending more than affordability benchmark, there were other important characteristics influencing the probability of ever living in a household exceeding the benchmark. In particular, people living in households experiencing

some kind of transition during the study period, for example, a change in household composition, place of residence, or tenure, also have a high probability of living in a household which at one time or another spends 30 per cent or more on shelter, but which does not do so persistently. The Canadians in these households contribute to the turnover of people living in households occasionally spending above the affordability benchmark.

Renters in subsidized housing for all three years of the study period, while experiencing probabilities similar to market renters of exceeding the benchmark for at least one year, had lower probabilities of persistently doing so. This was in spite of having a median income approximately half that of market renters.

This study, the first to explore the SLID longitudinal shelter cost data, was designed to advance our knowledge of patterns of affordability and build a base upon which further research can be carried out.

Research highlight prepared by Roberto Figueroa, senior researcher, CMHC

The complete technical report can be found at: www.statcan.ca

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Printed in Canada
Produced by CMHC 2M-01-08

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